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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-----------------------|---------------------|------------------|
| 09/438,491      | 11/12/1999  | / TOSHIYUKI YOSHIHARA | 684.2935            | 9399             |

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FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

[REDACTED] EXAMINER

SCHWARTZ, JORDAN MARC

[REDACTED] ART UNIT

[REDACTED] PAPER NUMBER

2873

DATE MAILED: 10/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                      |  |
|------------------------------|------------------------|----------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b>  |  |
|                              | 09/438,491             | YOSHIHARA, TOSHIYUKI |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>      |  |
|                              | Jordan M. Schwartz     | 2873                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 19 July 2002.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-17, 19 and 20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |                                                                                                |                                                                              |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)           | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ .                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7-8, are rejected under 35 U.S.C. 102(b) as being anticipated by Okuyama et al.

Okuyama et al reads on these claims by disclosing the limitations therein including the following: an aberration changing optical system (Figure 1, the entire system and column 4, line 1) comprising an optical element having a cylindrical surface (column 3, line 51) being rotatable about an optical axis (column 6, line 64, Figures 20-21, Figure 34, the middle Figure) and tiltable to an optical axis (column 3, line 58); an optical element having a refracting power in only one direction (column 6, line 60); and the aberration changing optical system within a projection optical system (abstract). It is believed that the surface refractive power would inherently not be greater than as set forth in claim 7, this being reasonably based upon the similarity in structure to that of the claimed invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Application no. 0 660 169 (hereinafter referred to as the "European'169") in view of Shimizu et al.

In reference to these claims, European'169 discloses an aberration changing optical system (column 2, lines 57 to column 3, line 18); characterized by an optical element having at least a cylindrical surface (column 8, line 46 to column 9, line 14); or an optical element having different powers in two orthogonal directions (column 17, line 18 to column 18, line 19); the optical element being rotated about the optical axis (column 8, line 46 to column 9, line 14 and column 11, lines 10-26); a plurality of such lenses (Figure 14 embodiments); and the optical elements used within a projection lens system (column 1, line 5). It is believed that the surface refractive power would inherently not be greater than as set forth in claim 7, this being reasonably based upon the similarity in structure to that of the claimed invention.

European'169 discloses as is set forth above, and, as stated above discloses the optical elements being rotated around the optical axis but does not disclose the optical element(s) tilted with respect to the optical axis. Shimizu et al teaches that in an aberration changing optical system comprising aberration changing optical elements (abstract) wherein the optical elements are rotated around the optical axis to provide astigmatism and aberration compensation (column 2, lines 15-60), that the optical elements can further be tilted with respect to the optical axis and tilted in opposite directions to each other for the purpose of further correcting for coma aberrations

(Figure 6, column 2, lines 15-60). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the aberration correcting optical element(s) of European'169 as tilted with respect to the optical axis and in opposite directions to each other since Shimizu et al teaches that in an aberration changing optical system comprising aberration changing optical elements wherein the optical elements are rotated around the optical axis to provide astigmatism and aberration compensation, that the optical elements can further be tilted with respect to the optical axis and tilted in opposite directions to each other for the purpose of further correcting for coma aberrations. Examiner takes Judicial Notice of the fact that the use of quartz or fluorite are well known compositions in the art of projection lens systems. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the claimed optical element composed of either quartz or fluorite since such compositions are well known in the art of projection lens systems.

Claims 6, 11-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama et al.

In reference to claims 6 and 16, Okuyama et al discloses as is set forth above but does not disclose the claimed optical element being composed of either quartz or fluorite. However, Examiner takes Judicial Notice of the fact that the use of quartz or fluorite are well known compositions in the art of projection lens systems. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention

was made to have the claimed optical element composed of either quartz or fluorite since such compositions are well known in the art of projection lens systems.

In reference to claims 11-13 and 17-18, Okuyama discloses as is set forth above but discloses the optical element in a projection apparatus and not specifically within a "projection exposure apparatus" as claimed. However, applicant is claiming the lens system for use in a projection exposure apparatus. The limitation of "for a projection exposure apparatus" goes to the intended use of the optical system comprising the inclined optical element and does not effect the structural limitations of the optical system comprising the inclined optical element. The lens system disclosed in Okuyama et al. has all of the structural limitations of the claimed lens system as set forth above. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the lens system of Okuyama "for use in a projection exposure apparatus" since this recitation goes to the intended use of the lens system and a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Claims 11-12, 16-17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsugu et al.

Matsugu et al discloses the limitations therein including the following: an optical system for a projection exposure apparatus (column 18, lines 1 and 53); comprising an optical element having a cylindrical surface or a refracting power in only one direction (column 1, line 67, column 2, lines 47 to column 3, lines 5-12); the optical element inclined with respect to the optical axis (column 3, line 9); the optical system within a projection optical system (column 18, lines 1 and 53); the optical system correcting an aberration within the projection optical system (column 13, lines 13-16); and the device including a process to transfer a pattern onto a wafer (column 1, line 15). It is believed that the surface refractive power would inherently not be greater than as set forth in claim 17, this being reasonably based upon the similarity in structure to that of the claimed invention. It is believed that the mark of Matsugu et al. would inherently include the use of a cylindrical lens inclined with respect to the optical axis, this being based upon Matsugu et al. disclosing "Formation of such a beam deflecting mark corresponds to the provision of a cylindrical lens or cylindrical mirror with inclination relative to the optical axis" (column 3, line 9). Regardless, Matsugu et al teaches of the mark as a lens having numerous possible lens configurations (column 2, line 66), that the mark can have "a similar function as that of a cylinder lens" (column 3, line 5), and that "the mark corresponds to such a lens inclined relative to the optical axis" (column 3, line 9) for the purpose of providing an optical element within an improved detecting system for a projection exposure apparatus (column 1, line 55). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the mark of Matsugu et al to be a cylindrical lens inclined with respect to the optical axis

since Matsugu et al teaches that the mark can be a lens having numerous possible lens configurations, that the mark can have "a similar function as that of a cylinder lens" and further that "the mark corresponds to such a lens inclined relative to the optical axis" for the purpose of providing an optical element within an improved detecting system for a projection exposure apparatus. The claimed "for projecting a device pattern onto a wafer" is set forth in the preamble and has not been given patentable weight. Furthermore, the "for projecting a device pattern onto a wafer" goes to the intended use of the projection system. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

*Ex parte Masham*, 2 USPQ2d 1647 (1987).

### ***Response to Arguments***

Applicant's arguments of Amendment C dated 5/6/02 entered with the CPA of 7/19/02 have been fully considered but they are not persuasive. With respect to the Okuyama et al reference, applicant argues that the optical element is not rotated about the optical axis, however, the examiner disagrees. As set forth in the office action, column 6, line 64 states that the system is rotated about a point on the optical axis and Figures 20 and 34 disclose the system "rotatable about the optical axis". There is nothing within the reference to state that the optical element is rotated about an axis perpendicular to the optical axis. Furthermore, applicant is broadly claiming "rotatable about an optical axis" and therefore regardless of whether the element is rotating horizontally or vertically, relative to the optical axis, it is still "rotating about the optical

axis". Applicant further argues that claims 11 and 12 recite the optical system in a projection system for projecting a device pattern onto the wafer however, this is set forth in the preamble and has not been given patentable weight. Furthermore, the "for projecting a device pattern onto the wafer" goes to the intended use of the optical system as set forth in the rejection above. With respect to the European Application no. 0 660 169 in view of Shimizu et al.rejections, applicant argues that Shimizu does not teach of the rotation or tilting of a lens about the optical axis, however, applicant is claiming "an optical element" and not a "lens". Furthermore, Shimizu et al is a teaching reference that teaches that within an aberration changing optical system in which the optical elements are rotated around the optical axis that the optical elements can further be tilted to provide coma correction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan M. Schwartz whose telephone number is (703) 308-1286. The examiner can normally be reached on Monday to Friday (8:00-5:30), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached at (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Jordan M. Schwartz  
Primary Examiner  
Art Unit 2873  
October 2, 2002